Sustainable Fuel Cycle
TASK FORCE
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Sustainable Fuel Cycle Task Force Science Panel

September 29, 2011

The Honorable Lee H. Hamilton
Co-Chairman
Blue Ribbon Commission on America's Nuclear Future
U.S. Department of Energy
C/O Mr. Timothy A. Frazier
1000 Independence Ave., SW
Washington, DC 20585-1290

The Honorable Brent Scowcroft
Co-Chairman
Blue Ribbon Commission on America's Nuclear Future
U.S. Department of Energy
C/O Mr. Timothy A. Frazier
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Dear Co-Chairman Hamilton and Co-Chairman Scowcroft:

As you have requested, the Sustainable Fuel Cycle Task Force Science Panel is pleased to make the following input on the July 2011 draft Blue Ribbon Commission (BRC) report.

While we support many of the constructive recommendations in the draft report, e.g. assurance of funding and local community consensus, we are disappointed that the BRC did not recommend the completion of the NRC Yucca Mountain licensing proceeding. We certainly agree with the draft BRC conclusion that geologic disposal capacity is promptly needed and we strongly believe that nation will be in a better position to decide on a path forward if the independent NRC licensing safety process is concluded in an open and transparent manner. Finishing the nearly completed licensing process will allow a comparison of the thoroughly evaluated real Yucca Mountain site (which has taken 30 years of study and $9 Billion) against a hypothetical unknown new site or approach that will likely take many more decades to develop. With this information in hand, a fair comparison can be made that best serves the national needs while respecting state and local concerns. As this is an urgent matter of national importance, we should be seeking to preserve options while we simultaneously seek potentially better options, if such exists and can be implemented in a safe as well as timely and cost effective manner.

Need to Preserve All Alternatives

For the past half century, the United States has undertaken efforts to develop mined geologic disposal facilities to address the ever increasing volumes of high-level nuclear wastes in the country. In the Nuclear Waste Policy Act, Congress found that a national problem had been created by the accumulation of spent nuclear fuel from nuclear reactors, radioactive waste from reprocessing of spent nuclear fuel, and other sources, and set the country on a path to remedy that problem.

Following passage of the Nuclear Waste Policy Act Amendments Act in 1987, Congress set its policy in law and the country focused its efforts on disposing of spent nuclear fuel and high-level radioactive waste in a geologic repository at Yucca Mountain, Nevada. With wastes accumulating at greater rates due to reactor life extensions, and growing interest in advanced reactor technologies, the decision by the Department of Energy to cease the development of that repository and seek an elusive, if not illusionary, better solution is simply not justifiable.

A specific and compelling example of the importance of concluding the NRC's licensing process is the Nuclear Waste Technical Review Board's (NWTRB) endorsement (in their "Technical Advancements and Issues report of June 2011…") of thick unsaturated zones – such as that at Yucca Mountain – as a potential repository environment. Such environments occur throughout the southwest and completion of the NRC's licensing process would greatly expedite evaluation of future repositories in this vast region of our country. In addition, completing the licensing process for Yucca would provide valuable regulatory lessons learned feedback to improve the regulatory process for any possible repository site.

While your report contains numerous valuable recommendations, there is nothing in it that would warrant or justify abandoning a workable policy that was well on its way to achieving the intent of Congress. The creation of the Blue Ribbon Commission was shadowed by an intimation that the science supporting the recommendation and licensing of Yucca Mountain was weak or somehow flawed, in spite of Secretary Chu previously being a signatory to the August 2008 National Laboratory Director's letter on a sustainable energy future urging licensing of the Yucca Mountain repository. Specifically, as Director of Lawrence Berkeley National Laboratory, he was ultimately responsible for some of the most important technical studies of the science of Yucca Mountain. As Secretary of Energy, he requested you to search for a better solution because, in his words, Yucca Mountain "was unworkable."

We believe that it does not matter how one views your recommendations or how the recommendations are packaged, no better solution has been found - there is no "silver bullet". Many of your recommendations bring to mind the earlier work of the Inter-Agency Review Group empanelled by President Carter, the debates that led to the passage of the Nuclear Waste Policy Act and the resulting legislation, and the work of several National Academy of Sciences committees that addressed this issue, most notably, the 2001 study *Disposition of High-Level Waste and Spent Nuclear Fuel: The Continuing Societal and Technical Challenges.*

The policies formulated throughout that time were working, and absent the politicization injected into the program over the past three years, would not only still be working, but would be nearing the accomplishment of a significant milestone directed by law. Starting over, without clearly defined criteria, selecting sites, implementing site characterization programs, and preparing and defending license applications will likely take upwards of twenty plus years to get back to where the Yucca Mountain program is now.

Deep Bore Holes

We are aware that some special interest groups are promoting that our national waste disposal efforts be directed away from mined geologic repositories, e.g. WIPP, Yucca Mountain, Olkiluoto or Forsmark facilities, with efforts placed toward the unproven deep borehole disposal concept. As scientists, who have worked for many decades in this field, we caution against an abrupt shift away from a known disposal concept to a new concept with many unknown unknowns. Although deep borehole disposal has some positive scientific attributes and it is certainly worthy of further scientific study, it is not developed sufficiently to become the primary pathway to meet our national disposal need. A host of scientific and engineering issues (that have already been resolved after decades of international progress on mined geologic repositories) would need to be addressed with at least a decade of deep borehole disposal research and development before that concept could be considered a national path forward approach.

Challenging issues of retrievability, reversibility, deep geologic environmental conditions, and statutory and regulatory requirements would have to be resolved for deep borehole disposal. In addition, if used nuclear fuel is to be disposed of in this method, thousands of tons of already packaged used fuel canisters would have to be cut open and repackaged into smaller packages with a large societal cost of many billions of dollars, health risks, and unknown engineering challenges. For your consideration, we have attached a Swedish paper that addresses some of the issues of the deep borehole disposal concept that have to be adequately addressed.

Your draft report has correctly pointed out that the social political siting challenges are the primary obstacle of selecting a disposal solution. There is no basis to assume that siting a deep borehole disposal facility will be any advancement in that critical area. Some deep borehole studies, e.g. Sandia National Laboratories and MIT, have suggested that most U.S. reactor sites have geologies that might be conducive to deep borehole disposal; however there is no reason to believe that these state and local communities would be supportive of deep borehole disposal at existing reactor sites.

Historical Reality Complications

The fourth and fifth recommendations of your report, that there be prompt efforts to develop one or more geologic disposal facilities, and prompt efforts to develop one or more consolidated interim storage facilities, while desirable, risk repeating history.

Nothing the country has yet undertaken in its attempts to remove wastes from reactor sites can be characterized as prompt, or for that matter successful. Interim storage provisions, as well as provisions for a monitored retrievable storage facility were part of the 1982 Nuclear Waste Policy Act. By statute, construction of a monitored retrievable storage facility could not begin until a license for the construction of a repository had been issued. The interim storage provisions were even more restrictive. The 1987 Amendment to the Act created a Negotiator to attempt to find an entity willing to host a repository or monitored retrievable storage facility at a technically qualified site on reasonable terms; there were no takers even when there was a repository envisioned. Efforts by the Federally designated NWPA Negotiators to obtain a site for interim storage on the Mescalero Apache Indian reservation were achieving some level of progress, until a "not in my backyard" earmark was inserted by a powerful home state U.S. senator, ended DOE's ability to continue that initiative. Similarly, the Private Fuel Storage interim storage facility on the Goshute Indian Reservation was politically derailed by the State of Utah.

It is naive to assume that a willing host would step forward today after observing how readily an administration vacillated and derailed a non-partisan program in the face of political pressure from a single powerful U.S. senator. Moreover, taking your first recommendation literally, that this be a consent base process, starting over would be fraught with opportunities for mischief by those who seek to prevent any program from moving forward. The most prompt method to remove fuel and permanently dispose of spent fuel from shutdown reactors is to just complete Yucca Mountain in accordance with current law.

Regulation Development Complications

Moving forward with a new repository site would also require an entire new suite of regulations, as the existing sets are either non-applicable (Yucca Mountain specific) or not consistent with current thinking on regulating repositories. There is a pattern in the development of U.S. high-level radioactive waste regulations – each time that Pandora's Box has been opened, it has taken longer to close it. The Environmental Protection Agency standard for high-level radioactive waste repositories was remanded in 1987; while it was reinstated for the Waste Isolation Pilot Plant within ten years, the new Yucca Mountain regulation took closer to fifteen.

Three sets of regulations are involved - for siting, implementation, and compliance. How those new regulations could be developed promptly defies comprehension, yet realistically, no first step to implement your recommendations can be taken without the new regulations.

The high-level radioactive waste regulations were changed for Yucca Mountain because Congress recognized that the existing U.S. standards were not appropriate for an unsaturated zone repository, and did not regulate in a manner that would protect those most impacted by the presence of a repository. If, in fact, the U.S. regulations had been appropriate to accommodate a repository in any media, they would not have needed to be changed. The exact situation exists today; should the U.S. decide to pursue borehole or salt disposal, the existing regulations would not be appropriate either. Million-year performance regulations are very difficult to realistically implement as you have acknowledged. Rational alternatives have been suggested, but the Environmental Protection Agency is not likely to lessen a requirement they have promulgated.

Interim Storage is Realistically Linked to Meaningful Repository Progress

Without a timely repository program underway, recommending that the United States proceed promptly to develop one or more consolidated interim storage facilities is likely doomed to fail because potential interim storage hosts would not have confidence that the materials would be removed.

Legislating a program for storage independent of a repository program is simply kicking the can down the road to become a problem for future societies, and is not consistent with policies that have been articulated in this country since 1978. If, in fact, the Blue Ribbon Commission had found a novel solution, there could be cause to welcome your report. Instead there is nothing new.

There should be a priority for stranded fuel at shutdown reactors; unfortunately, the best opportunity to move this fuel was associated with a repository at Yucca Mountain. There is no basis to conclude that any new program could result in that fuel being moved sooner than if it were moved to a fuel aging facility at Yucca Mountain.

The Draft Report notes that even with timely development of consolidated storage facilities, a large quantity of spent fuel will remain at reactor sites for many decades. The report does not address the fact that important criteria for selecting reactor sites, which included the ready availability of water that could be used without significant impact to the surrounding ecosystems, and proximity to transmission lines, are not necessarily ideal for long term surface storage of spent nuclear fuel. It is also true that reactor sites that could once be described as rural are becoming urban as cities expand.

National Needs vs. Consensus

It is not our intention to argue against your recommendation for a consent-based program, that is, in the sense that affected communities have an opportunity to decide whether to accept facility siting decisions and retain significant local control. Rather, the two parts of this recommendation are very different. The Blue Ribbon Commission received testimony of local community consent that apparently was not considered seriously in developing the draft report recommendations. Ignoring the true local community and choosing instead to respond only to population centers 100 miles and 250 miles from Yucca Mountain is wrong. In addition, this recommended approach does not consider the needs of populations beyond the host state borders that are also impacted by the lack of government removal of wastes from their communities. All these communities also should have a vote in deciding how to dispose of the wastes. And for Yucca they did. Their representatives voted to pass the laws setting the U.S. on the path to disposal at Yucca Mountain. The Nuclear Waste Policy Act concept of the opportunity for a state to disapprove the site recommendation was carefully crafted to address the potential for lack of consent at the state level. The requirement for a super-majority to override the notice of disapproval was as fair as Congress could make this difficult decision. The Nuclear Waste Policy Act is just that – a law that Congress passed that included a fair consideration of state and national rights, and the amendment that selected Yucca Mountain as the single site to be studied is also a law.

As for the true local community, once the Yucca Mountain site was designated, Nye County resolved to constructively engage in the federal process to construct and operate a repository in a safe and environmentally protective manner. This consent-based process has been subject to a rigorous scientific and technical process.

The second part of your recommendation for a consent-based program is that affected communities should retain significant local control and it is perhaps the most meaningful and potentially most useful recommendation of your report. Stakeholders should have an opportunity to understand key decisions and engage the process in a meaningful way, and key decisions should be revisited and modified as necessary along the way rather than being pre-determined. This is exactly the intent of the Safety Case approach that is being followed by most other countries. Nye County's enduring interest and support for the Project flies in the face of any notion that Yucca's closest citizens have been universally opposed.

Legal & Ethical Needs

There is another aspect of law that bears on this issue as well; the contracts that the Department of Energy signed with the utilities as a result of the passage of the Nuclear Waste Policy Act are legally binding. Today, the government is in default on those contracts and U.S. citizens are being taxed to pay the damages for the government's failure to follow the law.

These costs are a wasteful societal cost because the users of the nuclear generated electricity have already paid for its disposal.

Failure to follow existing law and instead recommend replacing it with a nebulous unknown concept for an unachievable future state burdens future generations in a way that would be abhorrent to the crafters of the Nuclear Waste Policy Act, and would force these future generations to continue paying for consequences of the government's current failure to follow the law.

Conclusions

We appreciate the major effort that has gone into the preparation of this comprehensive draft. And, we recognize that the BRC's "charter" dismissed it from commenting on Yucca Mountain as a repository. Nevertheless, while the draft explicitly noted reasons why Yucca Mountain has proven to be politically controversial, it failed to inform readers in the body of the text or barely mentioned the facts that: a) Yucca Mountain was ranked first in DOE's assessments of the three repository finalists prior to passage of the 1987 amendments; b) in 2002, Congress chose Yucca Mountain as the Nation's first repository; c) this site was endorsed by the Directors of all ten National Laboratories in August 2008, including Dr. Chu then head of Lawrence Berkeley National Laboratory; an d) the site has the approval of Nye County, Nevada thereby fulfilling a key recommendation of the BRC's report that a prospective site be endorsed by the hosting community.

At the minimum, we strongly recommend that the BRC's final report consider and preserve *all* alternatives and recommend finishing the NRC's nearly completed licensing of the Yucca Mountain repository.

With this important information in hand, the nation can consider the BRC's other options and make the best decisions for implementing a successful nuclear waste management for our nation's future.

Sincerely,
Science Panel

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